

National 5

Homework AP10

1. (a) Calculate the mean and standard deviation of the following set of numbers.

17 19 23 24 26

- (b) Another set had mean 31.7 and standard deviation 1.8 .
Make two valid comparisons between the two sets.

2. Tom looked at the cost of 10 different flights to New York.
He calculated that the mean cost was £360 and that the standard deviation was £74.
A tax of £12 is added to each flight.

Write down the new mean and standard deviation.

3. The weight, W kilograms, of a young giraffe is related to its age, M months, by the formula

$$W = \frac{1}{4} M^2 - 4M + 272$$

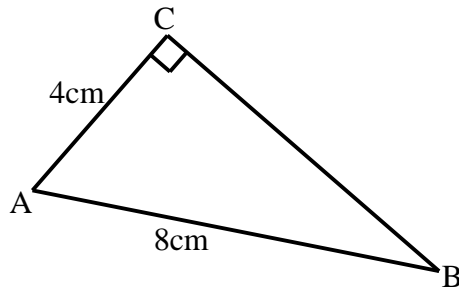
At what age will the giraffe weigh 83 kilograms?

4. One atom of gold weighs 3.27×10^{-22} grams.
How many atoms will there be in one kilogram of gold?
Give your answer in scientific notation correct to 2 significant figures.

5. Given that $f\ x = x^2 + 3$,

- (a) Evaluate $f\ -4$
(b) Given that $f\ t = 52$, find the value(s) of t .

6. In triangle ABC, angle $ACB = 90^\circ$, $AB = 8$ centimetres and $AC = 4$ centimetres.



Calculate the length of BC, giving your answer as a surd in its simplest form.

7. Two functions are defined by $f\ x = x^2 - 4x$ and $g\ x = 2x + 7$.

If $f\ x = g\ x$, find the values of x .

8. Evaluate, without a calculator

(a) $846 \div 30 - 1.09$ (b) $4\frac{1}{3} - 1\frac{1}{2}$ (c) $\frac{2}{5} \div 1\frac{1}{10}$

9. A company makes large bags of crisps which contain 90 grams of fat.
The company aims to reduce the fat content of the crisps by 50%.
They decide to reduce the fat content by 20% each year.
Will they have achieved their aim by the end of the 3rd year?
Justify your answer.

10. On a certain day, the depth, D metres, of water in a fishing port t hours after midnight, is given by the formula

$$D = 12.5 + \sin(30t)^\circ.$$

- (a) Find the depth of water at 1.30 p.m.
(b) The depth is recorded each hour.
What is the maximum difference in the depths during the 24-hour period?

11. Two variables x and y are connected by the relationship $y = ax + b$.
Sketch a possible graph of y against x to illustrate this relationship when a and b are each less than zero.

13. Solve, for $0 \leq x \leq 360$

(a) $7 \cos x^\circ - 4 = 0$ (b) $3 \tan x^\circ + 1 = 2 \sin 15^\circ$